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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,689	08/27/2001	Michael Knaupp	340058.534	4320

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EXAMINER

PRONE, JASON D

ART UNIT	PAPER NUMBER
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3724

DATE MAILED: 08/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/940,689	<b>Applicant(s)</b> KNAUPP ET AL.	
	<b>Examiner</b> Jason Prone	<b>Art Unit</b> 3724	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 15 June 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,3-11,13-22,24-43,62 and 63 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 37,38,62 and 63 is/are allowed.
- 6) ☒ Claim(s) 1,3-9,11,13-22,24,26-34,36,39,40,42 and 43 is/are rejected.
- 7) ☒ Claim(s) 10, 20, 25, 35, and 41 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

The indication that claims 4-7, 14, 16, 18, 22, 27, 28, and 30-32 incorporated allowable subject matter has been withdrawn.

#### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 13, 18, 28, 39, 42, and 43 are rejected under 35 U.S.C. 102(e) as anticipated by Shepherd (6,126,524).

#### Claims 13, 18, and 28:

In regards to claim 13, Shepherd discloses the same invention including a cutting head having a body (26) adapted to receive an orifice at an orifice location for generating a fluid jet (32), a mixing tube coupled to the body of the cutting head downstream of the orifice location (52), a motion assembly coupled to the cutting head (12) via a clamp positioned around the body of the cutting head (72), and a nozzle body assembly removably coupled to the cutting head (24, old and well known the parts of the fluid jets cutters are removably coupled), the clamp capable of holding the cutting head when the nozzle body is separated from the cutting head assembly allowing access to the orifice location without removing the cutting head from the clamp (Fig. 3).

In regards to claim 18, Shepherd discloses the clamp further comprises an upper guide coupled to the nozzle body assembly (68) and the upper guide capable of vertically supporting the nozzle body assembly when the cutting head is removed from the clamp (Fig. 3).

In regards to claim 28, Shepherd discloses the clamp is positioned around the body of the cutting head downstream of the orifice location (Fig. 3).

Claims 39 and 42:

3. In regards to claim 39, Shepherd discloses the same invention including an end effector assembly coupled to a ram for motion along a vertical axis (12), the ram being coupled to a bridge for motion along an axis parallel to a longitudinal axis of the bridge (12), the bridge being movable in a direction perpendicular to its longitudinal axis (Column 3 lines 10-15), the end effector comprising a cutting head having a body (26) adapted to receive an orifice at an orifice location for generating a high pressure fluid jet (32), a mixing tube coupled to the body of the cutting head downstream of the orifice location (52), a motion assembly (18) coupled to the cutting head via a clamp positioned around the body of the cutting head (72), a nozzle body assembly removably coupled to the cutting head assembly (24), the clamp capable of holding the cutting head assembly when the nozzle body is separated from the cutting head assembly (Fig. 3).

In regards to claim 42, Shepherd discloses the cutting head assembly is coupled to a source of high-pressure fluid (36) and to a source of abrasive (52).

Claim 43:

Shepherd discloses the same invention including an end effector assembly coupled to a two-dimensional manipulator (12) the end effector assembly being provided with a cutting head (26) having a body adapted to receive an orifice at an orifice location for generating a fluid jet (32), a mixing tube coupled to the body downstream of the orifice location (52), a motion assembly coupled to the cutting head (18) via a clamp (72), a nozzle body assembly removably coupled to the cutting head (24), and the clamp capable of holding the cutting head when the nozzle body is separated from the cutting head assembly allowing access to the orifice location without removing the cutting head from the clamp (Fig. 3).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoffman et al. (5,234,185). In regards to claim 1, Shepherd discloses the invention including a cutting head (26) having a body adapted to receive an orifice at an orifice location for generating a high pressure fluid jet (32), a mixing tube coupled to the body of the cutting head downstream of the orifice location (52), a motion assembly (12) coupled to the cutting head via a clamp positioned around the body of the cutting head (72), and the outer surface of the body mates with an inner surface of

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the clamp in a weight-bearing manner to vertically position and support the cutting head (Fig. 2).

In regards to claim 4, Shepherd discloses a nozzle body assembly removably coupled to the cutting head (24) and the clamp capable of holding the cutting head when the nozzle body is separated from the cutting head assembly allowing access to the orifice location without removing the cutting head from the clamp (Fig. 3).

In regards to claim 7, Shepherd discloses the clamp further comprises an upper guide coupled to the nozzle body assembly (68) and the upper guide capable of vertically supporting the nozzle body assembly when the cutting head is removed from the clamp (Fig. 3).

However, Shepherd fails to disclose a raised member is provided on the outer surface of the body and a recess is provided on the inner surface of the clamp, the raised member mates with the recessed, and the clamp has a quick-release mechanism.

Hoffman et al. teaches that it is old and well known in the art of clamping to incorporate a raised member that is provided on the outer surface of the body (28) and a recess is provided on the inner surface of the clamp (22), the raised member mates with the recessed (Fig. 2), and the clamp has a quick-release mechanism (32). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd with the clamp, as taught by Hoffman et al., to allow for a more secure fit and an easier way to remove the clamp.

6. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoffman et al. as applied to claim 1 above, and further in view of Sprague (1,701,281). Shepherd in view of Hoffman et al. disclose the invention but fail to disclose the clamp is provided with a triangularly arranged alignment member to position the cutting head in a desired location and the triangularly arranged alignment member comprises pins that protrude inwardly from the inner surface of the clamp.

Sprague teaches that it is old and well known in the art of cylindrical clamping to incorporate a triangularly arranged alignment member to position the cutting head in a desired location (20) and the triangularly arranged alignment member comprises pins that protrude inwardly from the inner surface of the clamp (20). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd in view of Hoffman et al. with the triangularly arranged alignment member, as taught by Sprague, allow for a cylindrical work piece to be centered in the clamp.

7. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoffman et al. as applied to claim 1 above, and further in view of Stewart et al. (6,379,214). Shepherd in view of Hoffman et al. disclose the invention but fail to disclose a position sensor coupled to the clamp adjacent the cutting head and a flexible shield coupled to and surrounding an end region of the mixing tube.

Stewart et al. teaches position sensor coupled to a clamp adjacent the cutting head (224), a shield coupled to an end region of the cutting head assembly (127), and the shield is made of a flexible material (127, it is noted that all materials with the correct

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force will flex even if it is a little bit). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd in view of Hoffman et al. with a position sensor and a shield, as taught by Stewart et al., to allow for a more precise cut and to prevent unwanted materials coming into contact with the jet.

8. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoffman et al. as applied to claim 1 above, and further in view of Hoaki (4,900,198). Shepherd in view of Hoffman et al. disclose the invention including a high-pressure fluid assembly with high-pressure tubing coupled to the cutting head (36 of Shepherd).

However, Shepherd in view of Hoffman et al. fail to disclose the high-pressure fluid assembly has a swivel through which high-pressure tubes pass to deliver-pressure fluid to the cutting head, the swivel allowing the tubing to follow motion imparted by the motion assembly.

Hoaki teaches a high-pressure fluid assembly that has a swivel allowing tubing to follow motion imparted thereon (12). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd in view of Hoffman et al. with a swivel, as taught by Hoaki, to prevent the high-pressure tubes from getting tangled while the machine moves.

9. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoffman et al. Shepherd in view of Hoffman et al. disclose the invention but fail to disclose the clamp has a quick-release mechanism.



Hoffman et al. teaches that it is old and well known in the art of clamping to incorporate a quick-release mechanism (32). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd with the clamp, as taught by Hoffman et al., to allow for a more secure fit and an easier way to remove the clamp.

10. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Sprague. Shepherd discloses the invention but fail to disclose the clamp is provided with a triangularly arrange alignment member to position the cutting head in a predefined location, the triangularly arranged alignment member comprises pins that protrude inwardly from the inner surface of the clamp, and the inner surface of the clamp is configured to contact an outer surface of the cutting head at three locations around the circumference of the cutting head.

Sprague teaches that it is old and well known in the art of cylindrical clamping to incorporate a triangularly arrange alignment member to position the cutting head in a desired location (20), the triangularly arranged alignment member comprises pins that protrude inwardly from the inner surface of the clamp (20), and the inner surface of the clamp is configured to contact an outer surface of the cutting head at three locations around the circumference of the cutting head (20). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd with the triangularly arranged alignment member, as taught by Sprague, allow for a cylindrical work piece to be centered in the clamp.

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Stewart et al. Shepherd discloses the invention but fails to disclose a position sensor coupled to the clamp adjacent the cutting head.

Stewart et al. teaches a position sensor coupled to a clamp adjacent the cutting head (224). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd with a position sensor, as taught by Stewart et al., to allow for a more precise cut.

12. Claims 21, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Gerber (3,877,334). Shepherd discloses the invention but fail to disclose a flexible shield coupled to and surrounding an end region of the mixing tube, the shield is provided with a flange that matingly engages a groove provided in the end region of the cutting head, and the disk of hard material is positioned in an upper inner region of the shield.

Gerber teaches a shield coupled to an end region of the cutting head assembly (127), and the shield is made of a flexible material (70, it is noted that all materials with the correct force will flex even if it is a little bit), the shield is provided with a flange that matingly engages a groove provided in the end region of the cutting head (Fig. 2), and the disk of hard material is positioned in an upper inner region of the shield (inner top surface of 70). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd with a shield, as taught by Gerber, to prevent unwanted materials coming into contact with the jet.

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13. Claims 26 and 27 rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoaki. Shepherd disclose the invention including a high-pressure fluid assembly with high-pressure tubing coupled to the cutting head (36).

However, Shepherd fails to disclose the high-pressure fluid assembly has a swivel through which high-pressure tubes pass to deliver-pressure fluid to the cutting head, the swivel allowing the tubing to follow motion imparted by the motion assembly, and the swivel is connected to a valve with a diameter smaller than 4 inches.

Hoaki teaches a high-pressure fluid assembly that has a swivel allowing tubing to follow motion imparted thereon (12) and the swivel is connected to a valve with a diameter smaller than 4 inches (Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd with a swivel, as taught by Hoaki, to prevent the high-pressure tubes from getting tangled while the machine moves.

14. Claims 29, 30, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoffman et al. In regards to claim 29, Shepherd discloses the invention including a cutting head assembly having a body adapted to receive an orifice at an orifice location for generating a high pressure fluid jet (26), a mixing tube coupled to the body of the cutting head downstream of the orifice location (52), and a motion assembly (12) coupled to the cutting head via a clamp positioned around the body of the cutting head (72).

In regards to claim 30, Shepherd discloses a nozzle body assembly removably coupled to the cutting head (24) and the clamp capable of holding the cutting head

when the nozzle body is separated from the cutting head assembly allowing access to the orifice location without removing the cutting head from the clamp (Fig. 3).

In regards to claim 32, Shepherd discloses the clamp further comprises an upper guide coupled to the nozzle body assembly (68) and the upper guide capable of vertically supporting the nozzle body assembly when the cutting head is removed from the clamp (Fig. 3).

However, Shepherd fails to disclose a clamp with a quick-release mechanism.

Hoffman et al. teaches that it is old and well known in the art of clamping to have a clamp that has a quick-release mechanism (32). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd the clamp, as taught by Hoffman et al., to allow for a user to easily remove the clamp.

15. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoffman et al. as applied to claim 29 above, and further in view of Sprague. Shepherd in view of Hoffman et al. disclose the invention but fail to disclose the clamp is provided with a triangularly arranged alignment member to position the cutting head in a desired location.

Sprague teaches that it is old and well known in the art of cylindrical clamping to incorporate a triangularly arranged alignment member to position the cutting head in a desired location (20). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd in view of Hoffman et al.

with the triangularly arranged alignment member, as taught by Sprague, allow for a cylindrical work piece to be centered in the clamp.

16. Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoffman et al. as applied to claim 29 above, and further in view of Stewart et al. Shepherd in view of Hoffman et al. disclose the invention but fail to disclose a position sensor coupled to the clamp adjacent the cutting head and a flexible shield coupled to and surrounding an end region of the mixing tube.

Stewart et al. teaches position sensor coupled to a clamp adjacent the cutting head (224), a shield coupled to an end region of the cutting head assembly (127), and the shield is made of a flexible material (127, it is noted that all materials with the correct force will flex even if it is a little bit). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd in view of Hoffman et al. with a position sensor and a shield, as taught by Stewart et al., to allow for a more precise cut and to prevent unwanted materials coming into contact with the jet.

17. Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoffman et al. as applied to claim 29 above, and further in view of Hoaki. Shepherd in view of Hoffman et al. disclose the invention including a high-pressure fluid assembly with high-pressure tubing coupled to the cutting head (36 of Shepherd).

However, Shepherd in view of Hoffman et al. fail to disclose the high-pressure fluid assembly has a swivel through which high-pressure tubes pass to deliver-pressure

fluid to the cutting head, the swivel allowing the tubing to follow motion imparted by the motion assembly.

Hoaki teaches a high-pressure fluid assembly that has a swivel allowing tubing to follow motion imparted thereon (12). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd in view of Hoffman et al. with a swivel, as taught by Hoaki, to prevent the high-pressure tubes from getting tangled while the machine moves.

18. Claims 39 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Gerber. In regards to claim 39, Shepherd discloses the invention including an end effector assembly coupled to a ram for motion along a vertical axis (12), the ram being coupled to a bridge for motion along an axis parallel to a longitudinal axis of the bridge (202), the end effector comprising a body adapted to receive an orifice at an orifice location for generating a high pressure fluid jet (24, 26, and 174), a mixing tube positioned within the body of the cutting head downstream of the orifice location (26), a motion assembly (200) coupled to the cutting head via a clamp positioned around the body of the cutting head (160 and 132), a nozzle body assembly removably coupled to the cutting head assembly (120 is removed in Fig. 5), the clamp capable of holding the cutting head assembly when the nozzle body is separated from the cutting head assembly (160 is capable of holding items 24, 26, and 174 when item 120 is not connected).

In regards to claim 42, Stewart et al. discloses the cutting head assembly is coupled to a source of high-pressure fluid (50) and to a source of abrasive (Abstract line 3).

However, Stewart et al. fail to disclose the bridge is movable in a direction perpendicular to its longitudinal axis.

Shepherd et al. teaches that it is old and well known in the art of water jet cutters to incorporate a bridge that is movable in a direction perpendicular to its longitudinal axis (48). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Stewart et al. with X or Y direction moving bridge, as taught by Shepherd et al., to give the cutter the ability to cut a larger surface area without having to move the work piece.

19. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shepherd in view of Hoaki. Shepherd discloses the invention including a high-pressure fluid assembly with high-pressure tubing coupled to the cutting head (36).

However, Shepherd fails to disclose the high-pressure fluid assembly has a swivel through which high-pressure tubes pass to deliver-pressure fluid to the cutting head, the swivel allowing the tubing to follow motion imparted by the motion assembly.

Hoaki teaches a high-pressure fluid assembly that has a swivel allowing tubing to follow motion imparted thereon (12). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to have provided Shepherd with a swivel, as taught by Hoaki, to prevent the high-pressure tubes from getting tangled while the machine moves.

***Allowable Subject Matter***

20. Claims 37, 38, 62, and 63 are allowed.
21. Claims 10, 20, 25, 35, and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

22. Applicant's arguments with respect to claims 1, 3-9, 11, 13-21, 22, 24, 26-34, 36, 39, 40, 42, and 43 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Prone whose telephone number is (571) 272-4513. The examiner can normally be reached on 7:00-4:30, Mon - (every other) Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer D. Ashley can be reached on (571) 272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

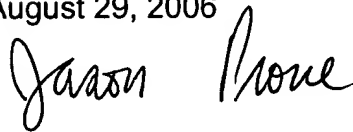
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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 29, 2006

A handwritten signature in black ink that reads "Jason Prone". The signature is written in a cursive, flowing style.

Patent Examiner  
Jason Prone  
Art Unit 3724  
T.C. 3700